

Dedicated Landscape Meter Program
Proposition 13 Urban Water Conservation Program
Grant Proposal

California Department of Water Resources
Office of Water Use Efficiency
1416 Ninth Street, Room 338
Sacramento, CA 95814
Attention: Marsha Prillwitz (916)651-9674

submitted by

Santa Clara Valley Water District
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Consolidated Water Use Efficiency 2002

I. Proposal Part One

**Proposal Part One:
A. Project Information Form**

1. Applying for (select one):	<input checked="" type="checkbox"/> (a) Prop 13 Urban Water Conservation Capital Outlay Grant <input type="checkbox"/> (b) Prop 13 Agricultural Water Conservation Capital Outlay Feasibility Study Grant <input type="checkbox"/> (c) DWR Water Use Efficiency Project												
2. Principal applicant (Organization or affiliation):	<u>Santa Clara Valley Water District</u>												
3. Project Title:	<u>Dedicated Landscape Meter Program</u>												
4. Person authorized to sign and submit proposal:	<table border="0"> <tr> <td style="vertical-align: top;">Name, title</td> <td><u>Hossein Ashktorab, Water Use Efficiency Unit Manager</u></td> </tr> <tr> <td style="vertical-align: top;">Mailing address</td> <td><u>5750 Almaden Expressway</u></td> </tr> <tr> <td></td> <td><u>San Jose, CA 95118-3614</u></td> </tr> <tr> <td style="vertical-align: top;">Telephone</td> <td><u>(408) 265-2600</u></td> </tr> <tr> <td style="vertical-align: top;">Fax.</td> <td><u>(408) 978-0156</u></td> </tr> <tr> <td style="vertical-align: top;">E-mail</td> <td><u>hashktorab@scvwd.dst.ca.us</u></td> </tr> </table>	Name, title	<u>Hossein Ashktorab, Water Use Efficiency Unit Manager</u>	Mailing address	<u>5750 Almaden Expressway</u>		<u>San Jose, CA 95118-3614</u>	Telephone	<u>(408) 265-2600</u>	Fax.	<u>(408) 978-0156</u>	E-mail	<u>hashktorab@scvwd.dst.ca.us</u>
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E-mail	<u>hashktorab@scvwd.dst.ca.us</u>												
5. Contact person (if different):	<table border="0"> <tr> <td style="vertical-align: top;">Name, title.</td> <td><u></u></td> </tr> <tr> <td style="vertical-align: top;">Mailing address</td> <td><u></u></td> </tr> <tr> <td></td> <td><u></u></td> </tr> <tr> <td style="vertical-align: top;">Telephone</td> <td><u></u></td> </tr> <tr> <td style="vertical-align: top;">Fax.</td> <td><u></u></td> </tr> <tr> <td style="vertical-align: top;">E-mail</td> <td><u></u></td> </tr> </table>	Name, title.	<u></u>	Mailing address	<u></u>		<u></u>	Telephone	<u></u>	Fax.	<u></u>	E-mail	<u></u>
Name, title.	<u></u>												
Mailing address	<u></u>												
	<u></u>												
Telephone	<u></u>												
Fax.	<u></u>												
E-mail	<u></u>												
6. Funds requested (dollar amount):	<u>\$100,000</u>												
7. Applicant funds pledged (dollar amount):	<u>\$102,155</u>												
8. Total project costs (dollar amount):	<u>\$202,155</u>												
9. Estimated total quantifiable project benefits (dollar amount):	<u>\$1.8 million</u>												
Percentage of benefit to be accrued by applicant:	<u>100%</u>												
Percentage of benefit to be accrued by CALFED or others:	<u>100%</u>												

Proposal Part One:
A. Project Information Form (continued)

10. Estimated annual amount of water to be saved (acre-feet): 83.3 af

Estimated total amount of water to be saved (acre-feet): 1750 af

Over 20 years

Estimated benefits to be realized in terms of water quality, instream flow, other: Yes

11. Duration of project (month/year to month/year): 7/2002 to 7/2003

12. State Assembly District where the project is to be conducted: 20, 21, 22, 23, 24, 27 and 28

13. State Senate District where the project is to be conducted: 10, 11, 13 and 15

14. Congressional district(s) where the project is to be conducted: 14, 15, 16 and 17

15. County where the project is to be conducted: Santa Clara County

16. Date most recent Urban Water Management Plan submitted to the Department of Water Resources: 2001

17. Type of applicant (select one):
Prop 13 Urban Grants and Prop 13
Agricultural Feasibility Study Grants:

- ☐ (a) city
- ☐ (b) county
- ☐ (c) city and county
- ☐ (d) joint power authority
- ☒ (e) other political subdivision of the State, including public water district
- ☐ (f) incorporated mutual water company

DWR WUE Projects: the above entities (a) through (f) or:

- ☐ (g) investor-owned utility
- ☐ (h) non-profit organization
- ☐ (i) tribe
- ☐ (j) university
- ☐ (k) state agency
- ☐ (l) federal agency

18. Project focus:

- ☐ (a) agricultural
- ☒ (b) urban

Proposal Part One:
A. Project Information Form (continued)

19. Project type (select one):

Prop 13 Urban Grant or Prop 13
Agricultural Feasibility Study Grant
capital outlay project related to:

- ☒ (a) implementation of Urban Best
Management Practices
- ☐ (b) implementation of Agricultural
Efficient Water Management Practices
- ☐ (c) implementation of Quantifiable
Objectives (include QO number(s))

☐ (d) other (specify)

20. Do the actions in this proposal involve
physical changes in land use, or
potential future changes in land use?

- ☐ (a) yes
- ☒ (b) no

Proposal Part One

A. *Signature Page*

By signing below, the official declares the following:

The truthfulness of all representations in the proposal;

The individual signing the form is authorized to submit the proposal on behalf of the applicant;
and

The individual signing the form read and understood the conflict of interest and confidentiality section and waives any and all rights to privacy and confidentiality of the proposal on behalf of the applicant.

Signature

Name and title

Date

Consolidated Water Use Efficiency 2002

II. Proposal Part Two

Project Summary

This pilot project is targeted at overcoming institutional and customer hurdles toward the retrofit of dedicated landscape meters. The Santa Clara Valley Water District has enlisted the support of its retail agencies in integrating more accurate measurement practices in ongoing meter replacement programs. Mountain View and Palo Alto have also agreed to contribute funds toward installation costs to lower or eliminate customer hurdles for those sites identified as having the largest conservation potential. The existence of metering "...improves accountability for water delivered throughout the system and, therefore facilitates management decisions." (AWWA Policy Statement on Metering 1998). With the prospect of service area-wide landscape water budgets soon coming into being, the physical metering of large landscapes is the last missing link toward improving outdoor watering practices.

The project is structured so customers pay for all installation costs while the capital costs of 200 meters would be covered by this grant proposal. The existence of volumetric wastewater charges for mixed-use meters will translate into very short payback periods for many large commercial and industrial customers. A well-marketed program will have good expectations for success, if it can address customer concerns for the effects of any service disruption. Integration into existing meter replacement programs may mitigate these concerns and reduce some installation costs. CII customers have been identified through previous on-site surveys that have large conservation potential. Knowledge of existing consumption is a critical requirement for monitoring and improving landscape water use.

This pilot project is designed to reduce customer capital outlay requirements, sculpt customer outreach marketing materials for measured landscape water use, and lower the perceived risk to any change in the level of water service.

The total cost of the program, including in-kind contributions from agencies is approximately \$202,000. The total benefit to participating agencies is \$1.8 million with 1750 acre-feet of water savings over 20 years. This proposal requests \$100,000 in grant funding.

A. Scope of Work: Relevance and Importance

1. Nature, Scope, And Objectives Of The Project.

BMP 5 is targeted toward defining best management practices for large landscape customers. It requires the development of water budgets for landscape water uses. The water budget combines a site measurement of landscape area with evapotranspiration requirements (and other variables) to provide an estimate of efficient use. This estimate of efficient use, in turn, can then be used by the customer as a benchmark: actual consumption can be compared to the target level representing efficient use. Potential conservation at a site can then be operationally defined as the amount by which consumption exceeds the water budget. Water budgets can include information on plant palate, stress factor, effective rainfall, slope, soil type as well as evapotranspiration.

Knowledge of actual consumption is key to the conservation potential of BMP 5. Customers that have a separate dedicated water meter for landscape uses have this direct measure of consumption provided by the water agency's meter reading and billing. Billing statements can also be used to incorporate the reporting of both consumption and the water budget target. Conservation programs that combine customer outreach with a rate structure tied to the water budget have been shown to induce large reductions in total consumption (20 to 30 percent). Secondary benefits of water budgets include improved landscape appearance and decreased irrigation runoff (a source of non-point pollution).

BMP 5 requirements for surveys apply to both dedicated landscape meters and the so-called "mixed use" meters--meters supplying water to interior and exterior uses. Customers with a mixed-use meter lack basic information on how much water their landscapes are using. "You cannot manage what you cannot measure¹." Unless the customer has installed their own volumetric submeter, the landscape professionals managing exterior water use have no idea how much existing water use departs from a standard of efficient water use. Retail water agencies are also precluded from considering implementation of rate structures tied to a water budget-based standard of efficient irrigation.

SCVWD is fortunate to have retail agencies that have historically offered retrofit of dedicated landscape meters. Previous offers have received very little interest from large retail customers, even when installation costs are waived. Commercial and institutional customers are notoriously risk averse, are often limited in staff time, are typically cash flow constrained, and have historically required very short payback periods. This pilot project is designed to reduce customer capital outlay requirements, sculpt customer outreach marketing materials for measured landscape water use (by dedicated meter or, where more appropriate, by existing submetering programs), and lower the perceived risk to any change in the level of water service.

¹ A quote attributed to Edward Demming.

2. Statement of Critical Water Issues.

This project is strongly needed because the Bay-Delta ecosystem is stressed in terms of the balance between supply and demand, water quality in surface and groundwater, salt water intrusion, and habitat management. Landscape conservation provides a range of benefits that are particularly important: Not only is water demand reduced, reducing pressure on supply sources, but landscape conservation reduces surface runoff which transports contaminants into sewer systems, streams and into the Bay ecosystem generally. Streets, fences and other hard-scape elements are damaged by excess watering and plant health is not optimal without well managed irrigation.

Although there is considerable effort under way to implement landscape conservation as directed in BMP 5 and otherwise, there is a large potential opportunity for saving water that falls through the cracks. Dedicated landscape meters are required to implement water budgets. Indeed some agencies have already done so and some have rate structures that support the water budgets. For mixed-use meters, site surveys are required in a phased in schedule. The problem is that many mixed-use sites have substantial potential water savings that cannot be fully realized with a survey alone. Without separate landscape metering, the results of surveys cannot be measured and program administrators and landscape managers have no way to objectively measure water savings.

This project is consistent with the CALFED objectives in that it:

- ?? Reduces demand allowing for improvements in habitat and ecosystem functions
- ?? Generally reduces the mismatch between Bay-Delta water supply and demand
- ?? Reduces surface run-off and contaminant transport.

The project is consistent with other state, regional, and local conservation planning activities:

- ?? Urban Water Management Plans. Dedicated landscape meters can contribute to achieving water savings, especially peak-season savings.
- ?? MOU and BMPs. This program generally contributes to the MOU conservation objectives. It is an example of an implementation strategy to improve the potential for BMP 5 savings.
- ?? Groundwater Management Plan. This plan would be supported by efficient water and salt use because it reduces contaminants in sewer inflows, and reduces demand on groundwater and other county supplies as well as reduces contaminants leaching into the groundwater supply.
- ?? SCVWD Integrated Water Resources Plan. This plan seeks to put conservation measures on equal footing with supply measures to meet the region's water needs. This can only be defensible if reliable and measurable savings can be determined.

B. Scope of Work: Technical/Scientific Merit, Feasibility, Monitoring, and Assessment

1. Methods, Procedures, and Facilities

This project is targeted at overcoming institutional and customer hurdles toward the retrofit of dedicated landscape meters. It involves installation of dedicated meters at sites that currently have mixed-use meters with high landscape water savings potential. Two retail agencies in the SCVWD service area— Palo Alto and Mountain View—will pay for 10 sites at each agency to install dedicated meters. The outreach program will target an additional 180 sites that have promising water savings potential where the customer will pay for meter installation. This pilot project is designed to reduce customer capital outlay requirements, sculpt customer outreach marketing materials for measured landscape water use, and lower the perceived risk to any change in the level of water service.

2. Task List and Schedule

Task 1: Identify mixed-use meter sites with high savings potential

Develop target list of large landscape customers on mixed use meters, using the landscape survey data base:

- ?? Palo Alto – has approximately 700 large landscape mixed use meters
- ?? Mountain View – has approximately 3675 large landscape mixed-use meters
- ?? Other retail agencies will be encouraged to participate

Existing meters would be sorted into two different targeting categories

- ?? Sites having large water conservation potential that could justify cost share on installation
- ?? Sites with average conservation potential or less.

Task 2: Program Notice and Recruitment

Based on information collected in Task 1, a targeted metering program will be designed in further detail and implemented. The database from the historical customer surveys will be used to develop a target list of those customers that have been identified as having large sites and mixed-use meters. By targeting this program to the sites having the greatest landscape water savings potential, the effectiveness and cost-effectiveness of the program can be increased.

- ?? Assess existing marketing materials, identify informational shortcomings, pretest new customer information packets;
- ?? Distribute new customer information packets;

- ?? Coordinate information materials with existing meter replacement programs to identify sites where meters can be replaced at lower cost.
- ?? Coordinate with landscape surveyors to distribute information on an as needed basis;
- ?? Offer installation cost subsidy to targeted sites;
- ?? Forward applications for participation to appropriate City staff.

Task 3: Conduct meter installations

Retail agency staff would be responsible for conducting all dedicated meter installations in accordance with local policy and practices. Backflow prevention devices, for example, are typically required to prevent contamination of other water service. To the extent practicable, offers of free dedicated landscape meters would be integrated into existing meter replacement programs.

Task 4: Coordination and Administration

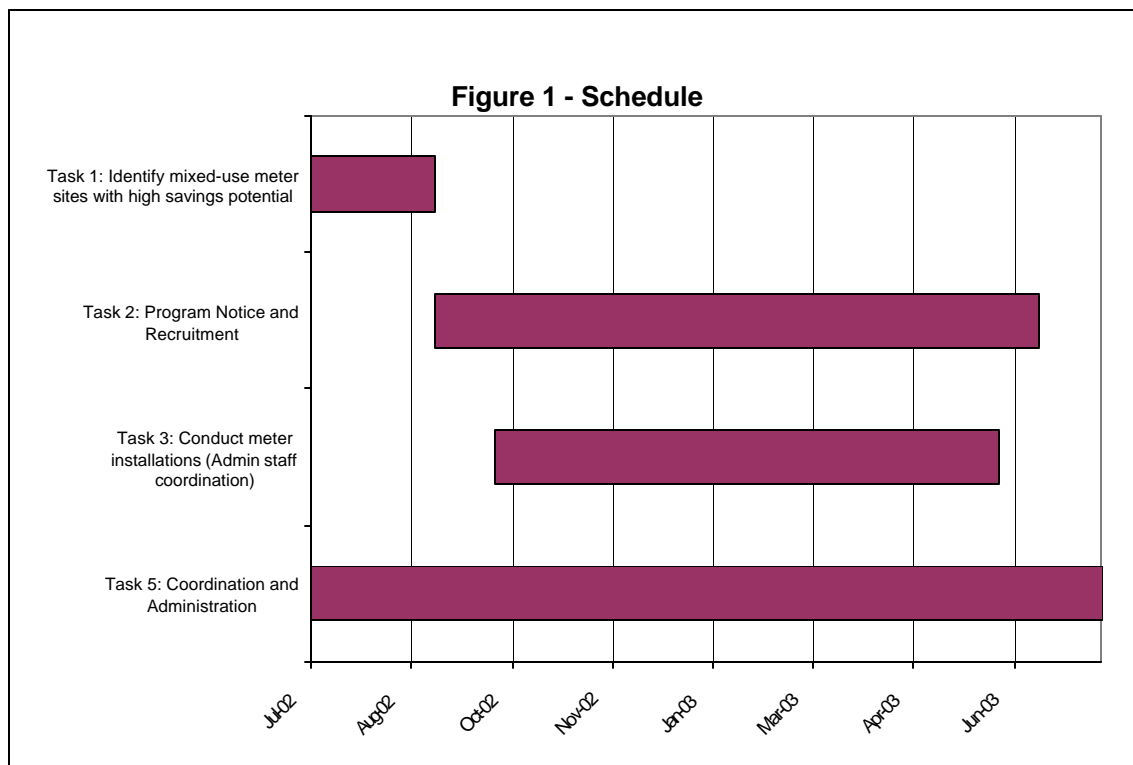
This task involves the coordination and administration of all program elements.

Schedule

Table 1 and Figure 1 show likely milestones for project completion.

Table 1 - Schedule

Task	Start Date	Duration (Days)	End Date
Task 1: Identify mixed-use meter sites with high savings poten	1-Jul-2002	62	31-Aug-02
Task 2: Program Notice and Recruitment	1-Sep-2002	300	27-Jun-03
Task 3: Conduct meter installations (Admin staff coordination)	1-Oct-2002	250	7-Jun-03
Task 5: Coordination and Administration	1-Jul-2002	394	29-Jul-03



3. Monitoring and Assessment

This program includes a focused evaluation component in the program to assess costs and savings, in keeping with SCVWD's IWRP. In particular:

- ?? Cost data will be maintained by SCVWD;
- ?? Savings can be assessed with billing histories, which are already maintained at the retail agencies; and
- ?? A summary report and data will be available at the end of the evaluation.

4. Preliminary Plans and Specifications and Certification Statements

Not applicable.

C. *Qualifications of the Applicants, Cooperators, and Establishment of Partnerships*

1. Resumes of Key District Staff

Resumes will be included at the end of this proposal.

2. Role of External Cooperators

This project as proposed in this grant application would be administered and conducted primarily by the Santa Clara Valley Water District. As a regional water wholesaler and groundwater agency, the SCVWD has strong reasons itself to investigate improved strategies for landscape water conservation programs. However, since the water and wastewater system is complex in the region, landscape conservation has potential benefits across a number of agency jurisdictions. SCVWD expects to approach a number of potential beneficiary agencies as the project moves forward and to seek collaboration and coordination.

The general roles of the external cooperators will consist of the following:

- ?? Project direction and oversight
- ?? Funding support
- ?? Site location
- ?? Assessment of project costs and benefits from different agency perspectives: groundwater, wastewater, reclamation, wholesale and retail water supply.
- ?? Identify cost-effective opportunities for cooperation on additional programs where mutually beneficial.
- ?? Assessment of implementation barriers and opportunities at different agency perspectives.

Some of the potential beneficiaries and collaborators for this project include the following:

a) City of Mountain View Public Services Department (Water)

The City of Mountain View has expressed interest in collaborating on this project by paying for and implementing 10 dedicated landscape meter installations. Mountain View has “on the order of” 2,000-3,000 large landscape mixed use meters. The City has about 700-800 dedicated irrigation meters.

b) City of Palo Alto (Water)

The City of Palo Alto has also expressed interest in collaborating on this project by paying for and implementing 10 dedicated landscape meter installations. Palo Alto has approximately 700 large landscape mixed-use meters and 237 dedicated irrigation meters.

c) San Jose / Santa Clara Water Pollution Control Plant

The San Jose/Santa Clara Water Pollution Control Plant is a large advanced wastewater treatment plant that treats wastewater from over 1,500,000 people that live and work in the 300-square mile area encompassing San Jose, Santa Clara, Milpitas, Campbell, Cupertino, Los Gatos, Saratoga, and Monte Sereno. The Water Pollution Control Plant has the capacity to treat 167,000,000 gallons of wastewater per day.

d) City of Sunnyvale Water Pollution Control Plant

The facilities and services provided by the City of Sunnyvale Water Pollution Control Plant include:

- ?? Industrial Pretreatment
- ?? Water Reclamation
- ?? Water Conservation
- ?? Water Connections
- ?? Pollution Control Operations and Maintenance
- ?? Public Education

e) The Palo Alto Regional Water Quality Control Plant

The Palo Alto Regional Water Quality Control Plant treats wastewater from the East Palo Alto Sanitary District, Los Altos, Los Altos Hills, Mountain View, Palo Alto, and Stanford. The plant provides advanced treatment of wastewater, including primary, secondary, and tertiary treatment. The plant disinfects and filters two million gallons per day to meet California Code of Regulations, Title 22 standards for unrestricted reuse. Reuse expands the limited water supply in California and reduces plant discharge to the Bay. The water is used for irrigating golf courses, construction tanker trucks, and for a marsh that supports endangered species, migrant birds, and wildlife.

f) South County Regional Wastewater Authority

South County Regional Wastewater Authority is a jointly owned by the Cities of Gilroy and Morgan Hill.

D. Costs and Benefits

1. Budget Breakdown and Justification

Project costs to develop this program are summarized in Table 2. The estimated total cost is \$202,155. District staff labor and overhead costs account for approximately 10% of this total. Outside evaluation consultants' labor to perform the process evaluation forms 5% of the total. Local retail contributions of installation assistance amount to \$70,000 (=20 sites at \$3,500 per site) for 35% of the total. The capital cost of large meters comprise the remaining 50%. The meter capital cost line item of \$100,000 derives from an estimate of 200 installations and \$500 for the average capital installation cost for the large meters, backflow prevention devices, and other plumbing adapters. The following is a brief explanation of cost elements presented in Table 2.

Salary and wages. Average hourly rates for salaries and wages for District staff assigned to this project were derived from salary scales posted for the District's Water Use Efficiency and Information Technology units (<http://www.scvwd.dst.ca.us/fyi/classspec1.htm#fna>).

Overhead. Average hourly rates for benefits were developed from the District's standard benefits package, as posted at <http://www.scvwd.dst.ca.us/fyi/recuitpg1.htm>. Overhead rates are the same as used by the District for annual budget development.

Labor hours on the part of the lead agency and collaborating agencies cover all of the tasks in the project to a partial or full extent. The program development and implementation will require considerable staff time to complete because this type of program has not been implemented on this scale previously.

The evaluation budget includes resources for program assessment by a research consultant.

Table 2: Budget for SCVWD Dedicated Landscape Meter Program

		SCVWD: Conservation Unit Manager		SCVWD: Conservation Specialist 1		SCVWD: Conservation Specialist 2		Total	
Task	Hours	\$52.38/hr.		Hours	\$31.66/hr.	Hours	\$34.95/hr.	Hours	\$/Task
Task 1: Identify mixed-use meter sites with high savings potential	6	\$ 314		12	\$ 380	12	\$ 419	30	\$ 1,114
Task 2: Program Notice and Recruitment	18	\$ 943		36	\$ 1,140	36	\$ 1,258	90	\$ 3,341
Task 3: Conduct meter installations (Admin staff coordination)	2	\$ 84		3	\$ 101	3	\$ 112	8	\$ 297
Task 4: Coordination and Administration	10	\$ 524		20	\$ 633	20	\$ 699	50	\$ 1,856
Total	36	\$ 1,865		71	\$ 2,254	71	\$ 2,488	178	\$ 6,607
		Collaborating Agencies:		Collaborating		Collaborating		Total	
Task	Hours	\$52.38/hr.		Hours	\$31.66/hr.	Hours	\$34.95/hr.	Hours	\$/Task
Task 1: Identify mixed-use meter sites with high savings potential	-	\$ -		-	\$ -	-	\$ -	-	\$ -
Task 2: Program Notice and Recruitment	8	\$ 419		16	\$ 507	16	\$ 559	40	\$ 1,485
Task 3: Conduct meter installations (Admin staff coordination)	3	\$ 168		6	\$ 203	6	\$ 224	16	\$ 594
Task 4: Coordination and Administration	8	\$ 419		16	\$ 507	16	\$ 559	40	\$ 1,485
Total	19	\$ 1,006		38	\$ 1,216	38	\$ 1,342	96	\$ 3,564
		Evaluation Contractor						Total	
Task	Hours	\$100/hr.						Hours	\$/Task
Task 1: Identify mixed-use meter sites with high savings potential	-	\$ -						-	\$ -
Task 2: Program Notice and Recruitment	20	\$ 2,000						20	\$ 2,000
Task 3: Conduct meter installations (Admin staff coordination)	80	\$ 8,000						80	\$ 8,000
Task 4: Coordination and Administration	-	\$ -						-	\$ -
Total	100	\$ 10,000						100	\$ 10,000

Summary	SCVWD	Collaborating Agencies	Evaluation Contractor	
Raw Labor	\$ 6,607	\$ 3,564	\$ 10,000	\$ 20,171
Overhead (@106.03%)*	7,006	3,778	included	\$ 10,784
Local Travel and Transportation	\$ 200	\$ 500	\$ 500	\$ 1,200
Installation Costs		\$ 70,000		\$ 70,000
Meter Costs	\$ 100,000			\$ 100,000
Total Project Costs	\$ 113,813	\$ 77,842	\$ 10,500	\$ 202,155
Participant Agency Costs	\$ 13,813	\$ 77,842	\$ 10,500	\$ 102,155
Requested Grant Funding	\$ 100,000	\$ -	\$ -	\$ 100,000

*FY 1999-2000 SCVWD's Federal Office of Management & Budget (OMB) Circular A-87 Overhead Rate (Will use current rate for Actual Claim)

2. Cost Sharing

As proposed in this grant application, the project would be co-funded by the SCVWD and its agencies. SCVWD will take the lead of project organization, with Mountain View and Palo Alto contributing installation costs.

3. Benefit Summary and Breakdown

The project outcomes include the following physical results:

- ?? The sites with dedicated meters will now be able to track with a water budget and to remain accountable by measurements of water savings.
- ?? Proper watering will improve the plant health of the landscape.
- ?? Better measurement will allow systematic tracking of use and leak repairs. Careful monitoring will reduce runoff with its concomitant effects: hardscape damage and contaminants in runoff.
- ?? Separate meters allow better planning for drought management (contingency plan for reducing water application) and emergency conditions (public health is not threatened if irrigation meters are shut down).
- ?? Customers will see improved landscape and reduced water bills.

a) Quantified Project Outcomes And Benefits

Quantified benefits include:

- ?? Water savings;

Water savings accrue from the proposed program derive from the implementation of water budgets and active conservation management that can be effectively measured only with dedicated meters.

The water savings benefits will occur on a year round basis, contributing particularly to the reduction of peak season demand.

b) Non-Quantified Project Outcomes and Benefits

Benefits and outcomes that are not quantified or not fully quantified include the following:

- ?? Reduced demand for water imported from the Bay-Delta. This grant application does not quantify the specific share of imported and local water.

- ?? Reduced demand on groundwater resources. This includes both less demand pressure and less potential for introduction of TDS into groundwater due to reduced TDS in wastewater inflows.
- ?? Reduced contaminants in run off.
- ?? Reduced energy consumption.

4. Assessment of Costs and Benefits

Table 3 summarizes the quantified costs and benefits of the project as proposed in this grant application. The major assumptions are described in what follows.

a) List of Major Assumptions

Assumptions used to calculate expected savings include:

?? Current Use (in/yr/acre)	50
?? Savings percent	10%
?? Average acres per site	1

With these assumptions, the expected savings are 5 inches per year per acre, or .42 acre-feet per year per meter.

Table 3: Cost Benefit Analysis (\$2001)

Year	Costs	Savings (afy/meter)	Savings AFY all meters	Supply Benefits (\$/AF)	Wastewater Benefits (\$/AF)	All Agency Benefits (\$)	PV Costs	PV Benefits	Annual NPV	Annual NPV
0	\$ 202,155	0.4	83.33	\$ 1,000	\$ 500	\$ 125,000	\$ 202,155	\$ 125,000	\$ (77,155)	\$ (77,155)
1	\$ -	0.4	83.33	\$ 1,020	\$ 510	\$ 127,500	\$ -	\$ 120,283	\$ 120,283	\$ 43,128
2	\$ -	0.4	83.33	\$ 1,040	\$ 520	\$ 130,050	\$ -	\$ 115,744	\$ 115,744	\$ 158,872
3	\$ -	0.4	83.33	\$ 1,061	\$ 531	\$ 132,651	\$ -	\$ 111,376	\$ 111,376	\$ 270,248
4	\$ -	0.4	83.33	\$ 1,082	\$ 541	\$ 135,304	\$ -	\$ 107,173	\$ 107,173	\$ 377,422
5	\$ -	0.4	83.33	\$ 1,104	\$ 552	\$ 138,010	\$ -	\$ 103,129	\$ 103,129	\$ 480,551
6	\$ -	0.4	83.33	\$ 1,126	\$ 563	\$ 140,770	\$ -	\$ 99,238	\$ 99,238	\$ 579,788
7	\$ -	0.4	83.33	\$ 1,149	\$ 574	\$ 143,586	\$ -	\$ 95,493	\$ 95,493	\$ 675,281
8	\$ -	0.4	83.33	\$ 1,172	\$ 586	\$ 146,457	\$ -	\$ 91,889	\$ 91,889	\$ 767,170
9	\$ -	0.4	83.33	\$ 1,195	\$ 598	\$ 149,387	\$ -	\$ 88,422	\$ 88,422	\$ 855,592
10	\$ -	0.4	83.33	\$ 1,219	\$ 609	\$ 152,374	\$ -	\$ 85,085	\$ 85,085	\$ 940,677
11	\$ -	0.4	83.33	\$ 1,243	\$ 622	\$ 155,422	\$ -	\$ 81,874	\$ 81,874	\$ 1,022,551
12	\$ -	0.4	83.33	\$ 1,268	\$ 634	\$ 158,530	\$ -	\$ 78,785	\$ 78,785	\$ 1,101,336
13	\$ -	0.4	83.33	\$ 1,294	\$ 647	\$ 161,701	\$ -	\$ 75,812	\$ 75,812	\$ 1,177,148
14	\$ -	0.4	83.33	\$ 1,319	\$ 660	\$ 164,935	\$ -	\$ 72,951	\$ 72,951	\$ 1,250,098
15	\$ -	0.4	83.33	\$ 1,346	\$ 673	\$ 168,234	\$ -	\$ 70,198	\$ 70,198	\$ 1,320,296
16	\$ -	0.4	83.33	\$ 1,373	\$ 686	\$ 171,598	\$ -	\$ 67,549	\$ 67,549	\$ 1,387,845
17	\$ -	0.4	83.33	\$ 1,400	\$ 700	\$ 175,030	\$ -	\$ 65,000	\$ 65,000	\$ 1,452,845
18	\$ -	0.4	83.33	\$ 1,428	\$ 714	\$ 178,531	\$ -	\$ 62,547	\$ 62,547	\$ 1,515,393
19	\$ -	0.4	83.33	\$ 1,457	\$ 728	\$ 182,101	\$ -	\$ 60,187	\$ 60,187	\$ 1,575,579
20	\$ -	0.4	83.33	\$ 1,486	\$ 743	\$ 185,743	\$ -	\$ 57,916	\$ 57,916	\$ 1,633,495
			1,750.00				\$ 202,155	\$ 1,835,650	\$ 1,633,495	

Assumptions for program benefits include the following:

- ?? 20 meter installations paid for by Mountain View and Palo Alto
- ?? 180 meter installations paid for by customers
- ?? \$3500 per installation paid for by agencies
- ?? \$500 for each meter's hardware (box, meter, backflow device)
- ?? Avoided water supply and distribution costs of \$1,000 per acre-foot, based on a high cost supply option in the IWRP.
- ?? Avoided wastewater treatment costs of \$500 per acre-foot.²
- ?? All dollar values are in real (inflation adjusted) Year 2001 dollars.
- ?? (The rate of general inflation is 0%).
- ?? Real (inflation adjusted) escalation in water supply costs of 2% per year.
- ?? Real (inflation adjusted) escalation in waste water supply costs of 2% per year.
- ?? Discount rate of 6% as specified in the proposal.³
- ?? 20-year life span and period of analysis.

b) Table with Quantified Costs and Benefits

Table 3 includes costs and benefits to CALFED and to the applicant agency. Customer costs and benefits are not included, although one could interpret the CALFED perspective to include customers. Since the applicant has not completed the identification of the specific collaborators for this project, we simply list the following potential perspectives of analysis:

CALFED (Regional and State) Perspective
Water Agency Perspectives
Wastewater Agency Perspectives
Groundwater Agency Perspectives
Customer Perspectives

c) Table with Non-Quantified Costs and Benefits

Table 4 summarizes the non-quantified or not-fully-quantified costs and benefits by perspective.

d) Demonstration of Local Cost Effectiveness

Table 3 is the demonstration of local cost-effectiveness. The table shows that the present value of benefits exceeds the present value of costs.

² Note: The reader should note that only a small portion of urban runoff currently flows through treatment plants in the SCVWD service area. The fact that the majority of runoff has no effect on the balance sheets of wastewater entities does not imply that urban runoff imposes zero costs on the environmental services provided by the Bay. For this reason, we use a consistent wastewater avoided cost for all urban runoff. To the extent that existing creeks and wetlands may provide similar effluent reduction services, should not change the intrinsic environmental valuation.

³ We used a 6% discount rate as required; however, it is not clear in the solicitation whether the intent is to discount with 6% real or nominal. Since all other costs are specified to be in real terms, it would be consistent to interpret the 6% as real, or the rough equivalent to 9% nominal at 3% inflation.

Table 4 - Costs and Benefits by Perspective of Analysis

Perspective	Costs	Benefits
<i>CALFED</i>	<ul style="list-style-type: none"> * Staff Labor: Program Design, Implementation, Outreach (WH & W) * Installation costs (W) * Evaluation Contractor (WH) * Meter costs (Grant) 	<ul style="list-style-type: none"> * Avoided Costs of Supply, Distribution, Treatment (WH & W) * Avoided Dry Season Runoff Mitigation (WW) * Reduced Hardscape Damage (C & City Street Dept) * Improved Emergency Management (WH&W) * Improved Drought Response (WH&W) * Improved Maintenance Management (WH&W) * Environmental Benefit: Beach Recreation & Public Health (Bay Delta) * Environmental Benefit: Waterway & Ocean Ecosystem (Bay Delta) * Improved Landscape Esthetics & Reduced Replacements (C)
<i>Wholesale Water Agency (Implementing Agency)</i>	<ul style="list-style-type: none"> * Staff Labor: Program Design, Implementation, Outreach (WH) * Evaluation Contractor (WH) 	<ul style="list-style-type: none"> * Avoided Costs of Supply, Distribution, Treatment (WH) * Improved Emergency Management (WH) * Improved Drought Response (WH) * Improved Maintenance Management (WH)
<i>Retail Water Agency (Collaborating Agency)</i>	<ul style="list-style-type: none"> * Staff Labor: Program Design, Implementation, Outreach (W) * Installation Costs (W) 	<ul style="list-style-type: none"> * Avoided Costs of Supply, Distribution, Treatment (W) * Improved Emergency Management (W) * Improved Drought Response (W) * Improved Maintenance Management (W)
<i>Wastewater Agency</i>	* Cost share if applicable.	<ul style="list-style-type: none"> * Reduced infiltration and inflow (WW) * Avoided Dry Season Runoff Mitigation (WW)
Notes: Cost and benefit incidence indicated as WH = wholesale agency, W = water agency, WW = wastewater agency, and C = customer		

E. Outreach, Community Involvement, and Acceptance

1. Outreach Efforts to Contact and Involve Disadvantaged Communities.

The program will test target multi-family sites with low-income residents and consider ways to reduce water costs to low-income residents.

2. Training, Employment, and Capacity Building Potential.

Most of the training, employment, and capacity building potential of this project is from the vendors and contractors that install and service the equipment.

3. Customer and Community Acceptance

This program has been crafted to first reach out to customers that have voluntarily agreed to participate in one of the customer surveys. It is expected that this program will have a good level of acceptance among this group.

4. Information Dissemination.

The status of the program and its evaluation results will be communicated:

- ?? To water, wastewater, and groundwater agencies;
- ?? To green industry representatives;
- ?? To customers and the general public; and
- ?? To advocacy organizations.

5. Evaluation, Feedback, and Revision

The project will include an integrated program evaluation to assess program costs, benefits, and process effectiveness. The evaluation will analyze and assess lessons learned, and summarize the results in a report.

F. Resumes of Key Personnel

Attached are resumes for the following project managers and key staff:

HOSSEIN ASHKTORAB
Santa Clara Valley Water District

EDUCATION:

Ph.D., University of California, Davis, 1989. Plant, Soil and Water Science.

Master of Science, California State University, Chico, 1981. Irrigation

Bachelor of Science, University of Mazandaran, 1979. Agriculture Engineering.

PROFESIONAL EXPERIENCE:

Unit Manager, Water Use Efficiency Unit, Santa Clara Valley Water District, Jan. 2001 – Present

Responsible for managing the District Water Use Efficiency Unit (WUE) providing technical direction, coordinating its activities with other District Units, and external stakeholders including 13 water retailers. The water conservation program is a long-term commitment of the District, which provides the highest quality programs and educational opportunities to residents and businesses in Santa Clara County.

Managing the implementation of all 14 BMPs required by the Memorandum of Understanding Regarding Urban Water Conservation in California (MOU). In addition, Managing the adopted Water Conservation Plan (including agriculture water conservation program) to comply with US Bureau of Reclamation mandate as required by the Central Valley Project Improvement Act (CVPIA).

Manage and participate in the development, implementation and administration of the water conservation and water recycling programs with more than \$9 million annual budget in Santa Clara County.

Develop partnership with local and regional cities including various water conservation programs with City of San Jose with more than \$3 million cost-sharing budget as well as cost-sharing agreement with six other agencies in Northern California for residential efficient clothes washing machine.

Participate and engage in the recycled water partnership such as South Bay Water Recycling cost sharing agreement for the amount of \$50 million projects in the Santa Clara County.

Participate and coordinate with local, regional and statewide water conservation and recycling organizations. Member of CUWA water conservation committee and CUWCC steering, plenary, Program committees and several subcommittees.

Water Conservation Specialist, Water Use Efficiency Unit, Santa Clara Valley Water District, 1/97 to 1/01

Developed and managed water conservation programs including programs for agricultural and large landscape water users.

Technical staff to District Landscape Water Advisory Committee, and District Agriculture Water Advisory Committee.

Responsible for implementation of CALFED grants for the District Agricultural and Urban Water Use efficiency programs. Developed proposals and received grant fund for two District's water recycling projects from Proposition-13 grant funding.

In partnership with the Santa Clara Farm Bureau, UC Cooperation Extension, Department of Agriculture, Department of Water Resources, and Santa Clara County Natural Resource Conservation Service, Developed and conducted nine Agricultural Irrigation and Nutrient Management seminars for the County growers and interested groups

Associate Land Water Use Analyst, California Department of Water Resources, 12/86 to 9/93

Technical coordinator for the Assembly Bill 325 Task Force Advisory Committee in 1991 and 1992 and facilitated the development of the State Landscape Water Conservation Model Ordinance. Assisted water agencies, cities and counties to develop and implement landscape water conservation guidelines and ordinances.

As a member of the State Water Conservation Advisory Committee, participated in the development of the Best Management Practices (BMPs) in water conservation.

Participated in the negotiation with the agricultural stakeholders and U.S. Bureau of Reclamation for the State Department of Water Resources Drought Water Bank. Developed a new method using nonlinear regression model to estimate crop water requirement values for major crops in the Delta's agricultural area which was the bases for the negotiation of the irrigation water use.

Supported agencies in the development of their water management plan, implementation and evaluation of various water conservation programs such as the ULF toilet replacement, toilet displacement devices, low flow shower heads and outdoor water audits.

Member of the 1989 and 1992 Xeriscape Conferences Steering Committee and chaired the Award Subcommittee meetings.

Irrigation Consultant, Chico, California, 2/80 to 9/81

Designed irrigation system and developed irrigation management plan for various farmers including a large fruit orchard located in Chico.

RESEARCH AND TEACHING EXPERIENCE:

Assistant Professor, Dept. of Irrigation Eng., Shiraz University, 9/93 to 6/96

Lectured on urban water use and conservation, crop water requirements, evapotranspiration and irrigation systems and design. Directed related laboratories and field trips.

Research Assistant professor, University of California, Davis, 6/96 to 12/97

Crop water requirement and water management. 3-D Aerodynamic latent heat flux research studies Field research study on irrigation system and evaluation.

Research Assistant, University of California, Davis, 9/81 to 5/82 and 4/83 to 12/86

Field laboratory investigations related to the separation of soil evaporation and transpiration of tomato plants. Studied the evaporation rate under different plant growth stages and soil moisture contents using highly sensitive Lysimeter. Collected and interpreted weather station data at U.C. Davis field station. Worked extensively with instruments, soil moisture and particle size analysis. Engaged in field and greenhouse studies related to root elongation, density, and plant response under different drip irrigation regimes and fertilizer applications

CERTIFICATION:

Irrigation Systems Evaluation; Landscape Irrigation Master Auditor

PROFESSIONAL MEMBERSHIP:

American Society of Civil Engineers; Irrigation Association; American Water Works Association; WateReuse Association

GERALD DE LA PIEDRA

EDUCATION

SAN JOSE STATE UNIVERSITY, San Jose, CA

Bachelor of Science in Environmental Studies (Emphasis: Water Resource Management)
Minor in Geology, December 1999.

EXPERIENCE

SANTA CLARA VALLEY WATER DISTRICT - Water Conservation Specialist I

January 2001 -
Present

Developing, marketing and managing Large Landscape Audit Program, Large Landscape Budget Program, Water-Wise House Call Program, residential Ultra Low Flush Toilet Programs, and several pilot studies. Data analysis (including savings calculations and cost-effectiveness) for most conservation programs. Involved with several California Urban Water Conservation Council Program Advisory Committees. Oversee group of student interns.

June 2000 -
January 2001

SANTA CLARA VALLEY WATER DISTRICT - Water Conservation Specialist I (Temporary)

Developed and marketed Large Multi-Family Ultra Low Flush Toilet Retrofit Program. Managed Hot Water Re-circulation Study (analyzed data and developed reports). Administered Water-Wise House Call Program. Assisted with reporting of Best Management Practices (BMPs) for the California Urban Water Conservation Council. Supervised group of student interns.

June 1999 -
June 2000

SANTA CLARA VALLEY WATER DISTRICT - Water Conservation Technician

Scheduled and performed water audits for residential users (processed information and analyzed data). Managed day to day operations of the Ultra Low Flush Toilet rebate program and the Hot Water Re-circulation Study. Coordinated with outside agencies. Interacted with customers (answered questions, received feedback and provided information). Participated in Community Outreach programs.

January 1999 –
June 1999

CENTER FOR DEVELOPMENT OF RECYCLING - Volunteer

Interacted with customers - answered questions and directed customers to correct information. Conducted research and gathered recycling/reuse information. Assisted in the development of a recycling/reuse database. Authored several grant proposals which totaled \$20,000.

ACTIVITIES

Computer Skills - Windows, Microsoft Word, Microsoft Access and Microsoft Excel
Certified Water Conservation Practitioner, American Water Works Association
Certified Landscape Irrigation Auditor, The Irrigation Association
Member, California Irrigation Institute